This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A system for processing electromyogram (EMG) input signals from an external abdominal surface to detect uterine contractions, said system comprising:

a sensor configured to detect an EMG signal and to generate a corresponding EMG input signal ; and

a signal processor coupled to said sensor and configured to generate a respective EMG prediction error signal , which represents a magnitude of at least one contraction event and periodicity of a set of multiple contraction events.

2. (Original) The system of claim 1 further comprising a display device coupled to said signal processor.

3. (Original) The system of claim 2, wherein said display device is selected from the group consisting of a computer monitor, a instrument display monitor, a bedside display monitor, a printer, and a strip chart recorder.

4. (Currently Amended) The system of claim 1, wherein ~~each of said sensors~~ the sensor comprises two EKG electrodes configured to be placed in contact with said exterior abdominal surface adjacent to a uterus.

5. (Currently Amended) The system of claim 1, wherein said signal processor further comprises:

an amplifier coupled to ~~a~~ the sensor and ~~adapted~~ adapted to amplify said EMG input signal and provide an amplified representation of said EMG input signal;

a low pass filter coupled to said amplifier and configured to filter said amplified representation of said EMG input signal to generate a low-pass filtered representation of said EMG input signal;

an analog to digital converter coupled to said low pass filter and configured to process said low-pass filtered representation of said EMG input signal to generate a digitized representation of said EMG input signal;

a noise filter coupled to said analog to digital converter and configured to remove a power line structure from said digitized representation of said EMG input signal to generate a noise-filtered version of said EMG input signal; and

a digital processor coupled to said noise filter and configured to process said noise-filtered version of the EMG input signal to compute said EMG prediction error signal.

6. (Original) The system of claim 5, wherein said digital processor comprises an adaptation algorithm, wherein said adaptation algorithm comprises a parameter estimating portion that is configured to be coupled to a prediction error filter, wherein said parameter estimating portion is configured to compute said at least one prediction coefficient to optimize an EMG prediction error signal performance index.

7. (Original) The system of claim 6, wherein said adaptation algorithm is further configured to filter said digitized representation of said EMG input signal to compute said EMG prediction signal.

8. (Original) The system of claim 6, wherein said adaptation algorithm is selected from the group consisting of a Least Square adaptation algorithm and a Burg adaptation algorithm.

9. (Original) The system of claim 6, wherein said prediction error filter is configured to have model orders in a range from 2 to 10.

10. (Original) The system of claim 6, wherein said adaptation algorithm is a Least Square adaptation algorithm that has a time interval range from about 2 seconds to about 12 seconds.

11. (Original) The system of claim 6, wherein said adaptation algorithm is a Burg adaptation algorithm that has a data collection window duration from about 2 seconds to about 10 seconds.

12. (Original) The system of claim 6, wherein said adaptation algorithm is a Burg adaptation algorithm that has a data collection window duration of about 10 seconds and said prediction error filter is of a fourth order.

13. (Original) The system of claim 12, wherein said digitized representation of said EMG input signal has a sampling frequency rate range from about 100 Hz to about 200 Hz.

14. (Original) The system of claim 6, wherein said adaptation algorithm comprises a Burg adaptation algorithm having a data collection window duration of about 5 seconds, said prediction error filter is a fourth order filter, and said digitized representation of said EMG input signal has a sampling frequency rate of about 200 Hz.

15. (Original) The system of claim 6, wherein said adaptation algorithm is a Burg adaptation algorithm having a data collection window duration of about 10 seconds, said prediction error filter is of a second order, and said digitized representation of said EMG input signal has a sampling

frequency rate of about 100 Hz.

16. (Original) A method for processing electromyogram (EMG) input signals from an external abdominal surface to detect uterine contractions, said method comprises:

generating at least one EMG input signal ; and

computing an EMG prediction error signal which represents a magnitude of at least one contraction event and periodicity of a set of multiple contraction events.

17. (Original) The method of claim 16, further comprising displaying said EMG prediction error signal on a display device.

18. (Original) The method of claim 16, wherein said step of computing said EMG prediction error signal further comprises:

computing at least one prediction coefficient to optimize an EMG prediction error signal performance index in a parameter estimating portion of an adaptation algorithm; and

filtering a digitized representation of said at least one EMG input signal in a prediction error filter of said adaptation algorithm.

19. (Original) The method of claim 18, wherein said adaptation algorithm is selected from the group consisting of a Least Square adaptation algorithm and a Burg adaptation algorithm.

20. (Original) The method of claim 18, wherein said prediction error filter has model orders in a range from 2 to 10.

21. (Original) The method of claim 18, wherein said adaptation algorithm is a Least Square adaptation algorithm that has a time interval range from about 2 seconds to about 12 seconds.

22. (Original) The method of claim 18, wherein said adaptation algorithm is a Burg adaptation algorithm having a data collection window duration from about 2 seconds to about 10 seconds.

23. (Original) The method of claim 18, wherein said adaptation algorithm is a Burg adaptation algorithm that has a data collection window duration of about 10 seconds and said prediction error filter is of a fourth order.

24. (Original) The method of claim 23, wherein said digitized representation of said EMG input signal has a sampling frequency rate range from about 100 Hz to about 200 Hz.

25. (Original) The method of claim 18, wherein said adaptation algorithm is a Burg adaptation algorithm that has a data collection window duration of about 5 seconds, said prediction error filter is of a fourth order and said digitized representation of said EMG input signal has a sampling frequency rate of about 200 Hz.

26. (Original) The system of claim 18, wherein said adaptation algorithm is a Burg adaptation algorithm that has a data collection window duration of about 10 seconds, said prediction error filter is of a second order and said digitized representation of said EMG input signal has a sampling frequency rate of about 100 Hz.